AMENDMENTS TO THE SPECIFICATION

Please amend paragraph **[00012]** as follows:

[00012] Referring now more particularly to the Drawings, the present invention is directed to generating a continuous mathematical model of a feature common to subjects in a subject group. As shown in the flow diagram of **FIG. 1,** a method for generating a continuous mathematical model of a feature such as blood pressure in a group of humans starts at block 10 where a sample data set from each subject in the subject group is selected. Next, at block 12, a set of expansion functions to be used in the representation of the sample data set is also selected. At block 14, the selections made in blocks 10 and 12 are used to mathematically expand each member of the sample data set in the form of a summation of the results of multiplying each of the expansion functions in the set of expansion functions by a different mathematical parameter. Next, at block 16, a value for each of the different mathematical parameters is determined from the mathematical expansion of block 14. Next, at block 18, a corresponding distribution function for each of the mathematical parameters is derived based on the values determined in block 16. Finally, at block [[120]] 20, a continuous mathematical model of the feature is generated from the derived distribution functions of block 18 and the expansion functions of block 12. The details and purpose of operations performed in each block in **FIG. 1** will now be explained in greater detail in conjunction with the accompanying figures.

Please amend paragraph **[00026]** as follows:

[00026] **FIG. 2** is a diagram illustrating the various trajectories of a feature, such as blood pressure, common to real subjects in a subject group in sample space [[20]] 21. For simplicity, the trajectories for only four subjects 22, 24, 26 and 28 are enumerated herein, although any number of real subjects can be used. Each trajectory on the sample space [[20]] 21 represents a sample data set on the same feature of each subject, such as the subject's blood pressure level, at a specific age. Additionally, the trajectories of real subjects are considered a random (stochastic) process parameterized by age, although as described below, the random process can be conditional on risk

factors and other features. The sample space [[20]] 21 for a particular feature is the collection of the one trajectory for each person. For simplicity, the sample space [[20]] 21 is mathematically denoted as "Ω" throughout the equations in the specifications, with elements $\omega = \{\omega_1, \omega_2, \omega_3 ...\}$, where ω_k specifies the trajectory of the feature of a particular person, such as trajectory 22 in FIG. 2. The random process for the trajectories is designated by upper case letters set in boldface font and is notated as having explicit dependence on ω, that is, $\boldsymbol{F}(\omega,t)$. Each function in equation (1) is a realization of the stochastic process insofar as $F^k(t) = \boldsymbol{F}(\omega_k,t)$, where ω_k is the trajectory of the kth person in the set ω.

Please amend paragraph **[00050]** as follows:

[00050] If more than one coefficient is selected, then the flow proceeds to the decision block 1052 where a determination is made as to the independence of the coefficients $\boldsymbol{f}_j(\omega)$. If the $\boldsymbol{f}_j(\omega)$ values are independent, then their covariance is zero. First, the distributions of each coefficient is transformed by subtracting out the mean of the individual values of the coefficient. For notational simplicity the mean of a coefficient is represented with angle brackets throughout the ~~disclosure Thus,~~ disclosure. Thus, for the jth coefficient

$$\langle f_j \rangle = \frac{1}{K}\sum_{k=1}^{K} f_j^k \qquad \text{Eq. (5),}$$

where K is the total number of individuals for which data exist. Then for the kth individual, subtracting out the means from the coefficients in Eq. (3) yields

$$F^k(t) = (\sum_{j=0}^{J}(f_j^k - \langle f_j \rangle)P_j(t)) + (\sum_{j=0}^{J}\langle f_j \rangle P_j(t)) \qquad \text{Eq. (6).}$$

Please amend paragraph **[00080]** as follows:

[00080] The samples for the distribution for the random variables s_0 and s_1 are shown in Figures 9B and 9C. The distribution for s_0 looks like an exponential distribution. Using maximum likelihood techniques described above, the distribution for s_0 is found to be $P_0(s) = \exp(-s/\lambda)/\lambda$ where ~~$\lambda = 3513$. As shown in FIG. 9B,~~ $\lambda = 3513$, as shown in FIG. 9C. The distribution for s_1 resembles a normal distribution. Also, using maximum likelihood techniques, the distribution for s_1 is found to be normal with standard deviation 12.4, as shown in FIG. 9C.

Please amend paragraph **[00086]** as follows:

[00086] In another embodiment shown in **FIG. 11**, the mathematical model of the present invention can be used for multiple features common to a subject group, and for generating trajectories that represent the interdependence of these common features, such as plotting a coronary occlusion as function of blood pressure or cholesterol level. As shown in the flow diagram of ~~FIG.1~~ FIG. 11, generating the continuous mathematical model of two features starts at block 1102 where two or more sample data sets of different features from each subject in the subject group are selected. Next, at block 1104, a set of expansion functions to be used in the representation of the each of the sample data sets is also selected. At block 1106, the selections made in blocks 1102 and 1104 are used to mathematically expand each member of each sample data set in the form of a summation of the results of multiplying each of the expansion functions in the set of expansion functions of the data set by a different mathematical parameter. Next, at block 1108, a value for each of the different mathematical parameters are determined from the mathematical expansion of block 1106. Next, at block 1110, a corresponding distribution function for each of the mathematical parameters is derived based on the values determined in block 1108. Next, at block 1112, a

continuous mathematical model for each of the features selected in block 1102 is generated from the derived distribution functions of block 1110 and the expansion functions of block 1106. Next, at block 1114, the mathematical models for each of the features generated in block 1112 are correlated. Finally, at block 1116, a continuous mathematical model is generated based on the correlation results of block 1114, that accounts for all the features selected at block 1102. Many of the details of operations of this embodiment of the present invention, particularly those in blocks 1102 to 1112 were discussed in conjunction with FIG. 1 or can be readily understood therefrom. The following detailed description is therefore focused primarily on the correlating operations performed in block 1114 of FIG. 11.

Please amend paragraph **[00099]** as follows:

[00099] Effects of health interventions can also be modeled either as a change in value of a feature, as the rate of change of a feature, or as a combination of both types of change. The choice and the exact model depend on [[he]] <u>the</u> intervention and on the available data.